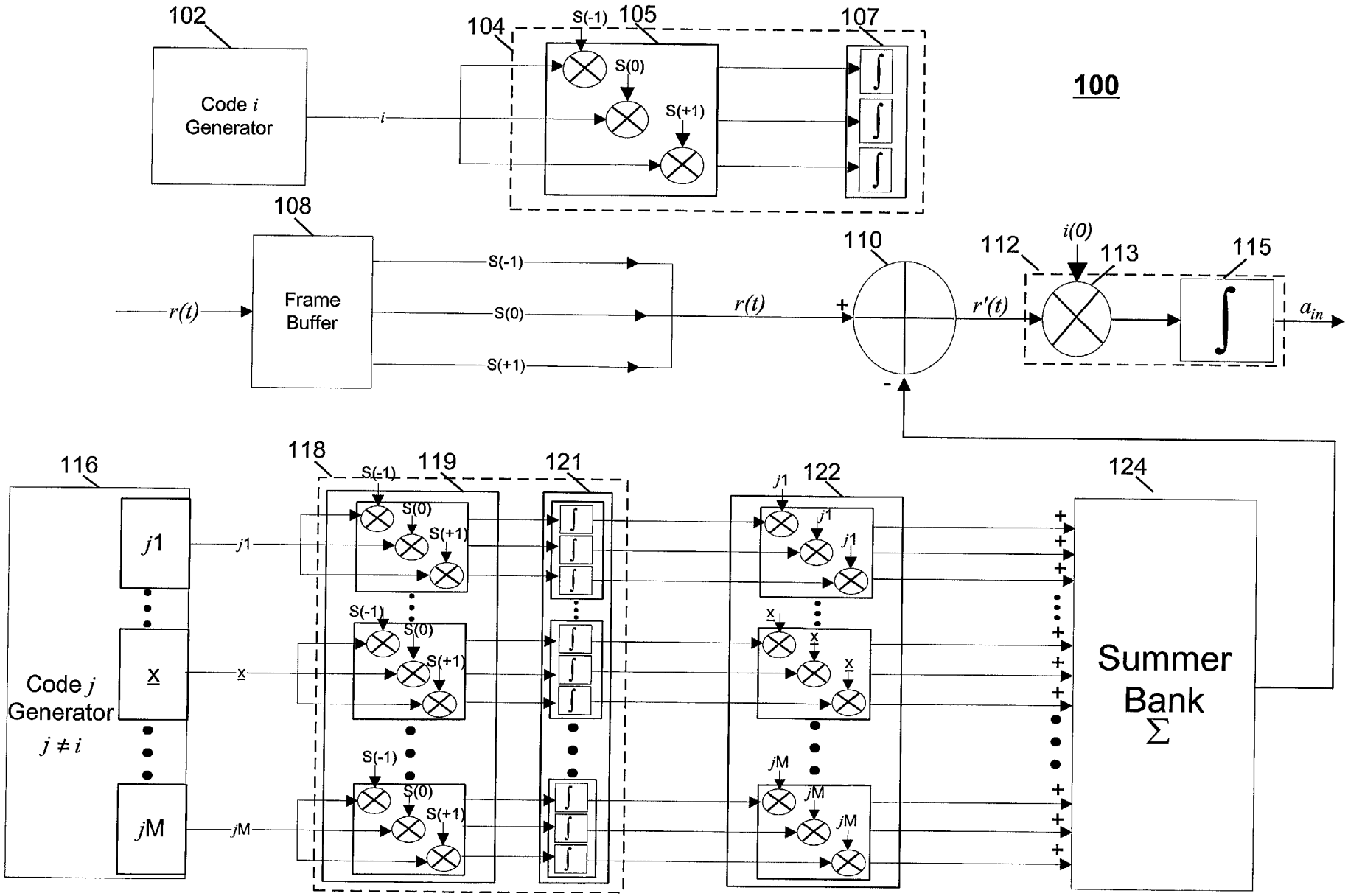
100
102
Code i Generator
i
104
S(-1)
105
S(0)
S(+1)
107
108
Frame Buffer
r(t)
S(-1)
S(0)
S(+1)
110
r(t)
+
-
r'(t)
112
i(0)
113
115
a_{in}
116
Code j Generator
$j \neq i$
j1
x
jM
118
119
121
122
124
Summer Bank
Σ

FIG. 1A

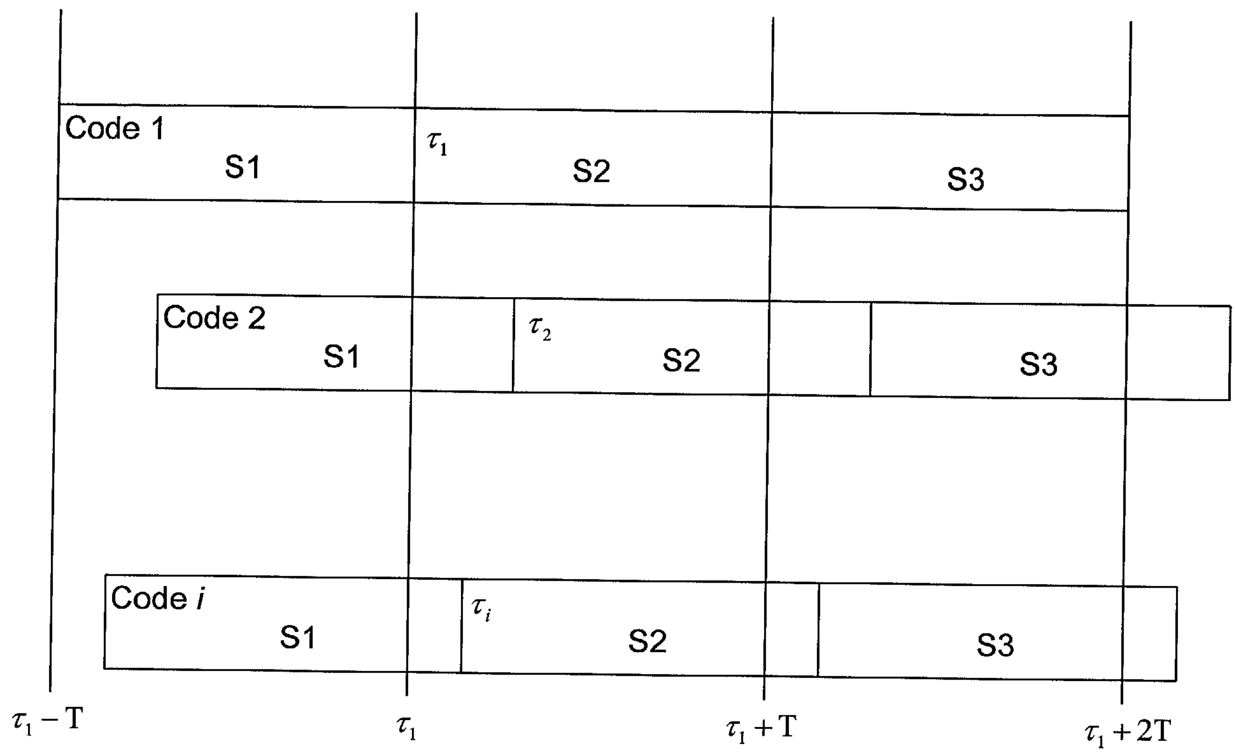

FIG. 1B

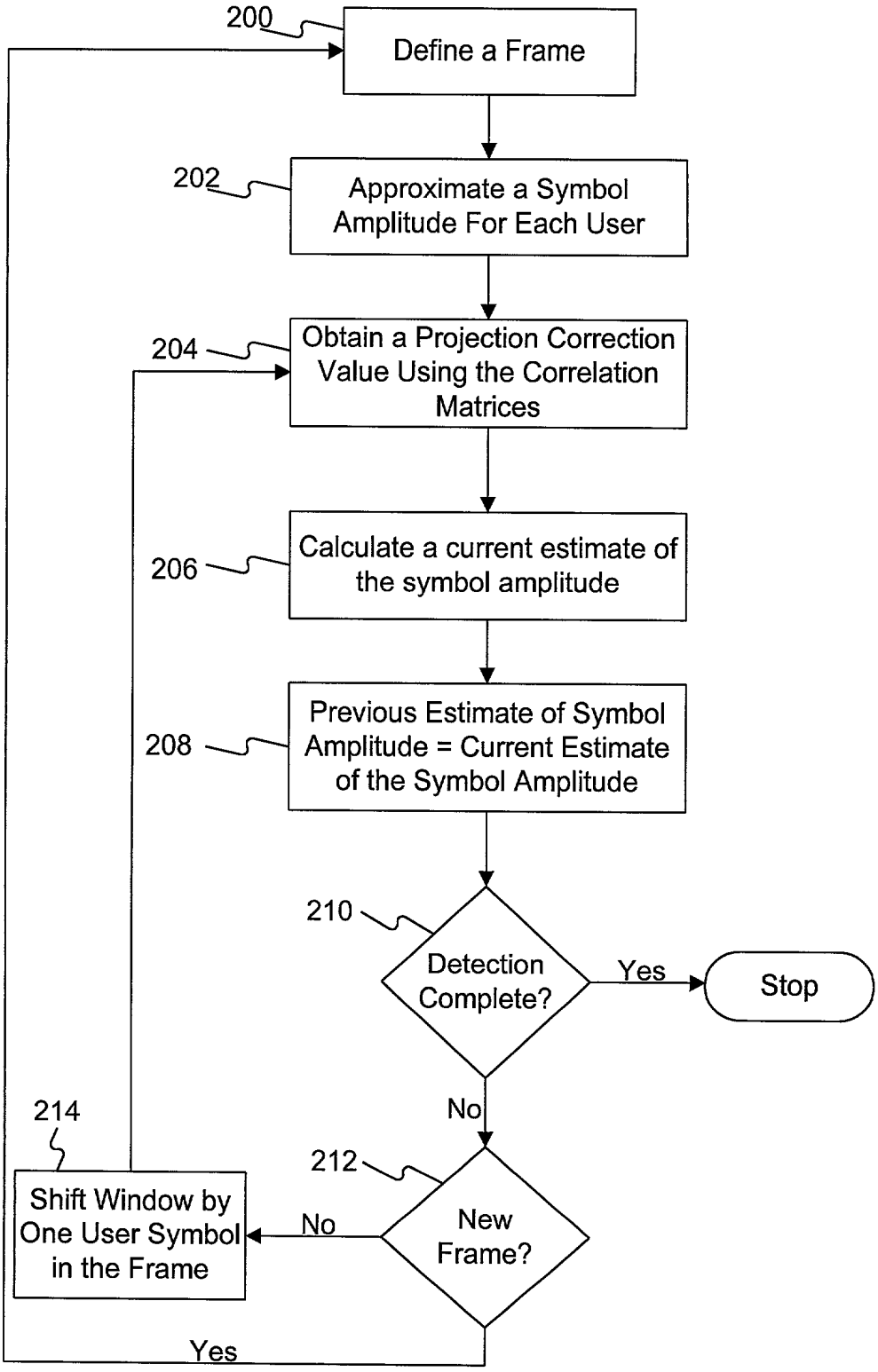
200
Define a Frame
202
Approximate a Symbol Amplitude For Each User
204
Obtain a Projection Correction Value Using the Correlation Matrices
206
Calculate a current estimate of the symbol amplitude
208
Previous Estimate of Symbol Amplitude = Current Estimate of the Symbol Amplitude
210
Detection Complete?
Yes
Stop
No
212
New Frame?
No
214
Shift Window by One User Symbol in the Frame
Yes

FIG. 2

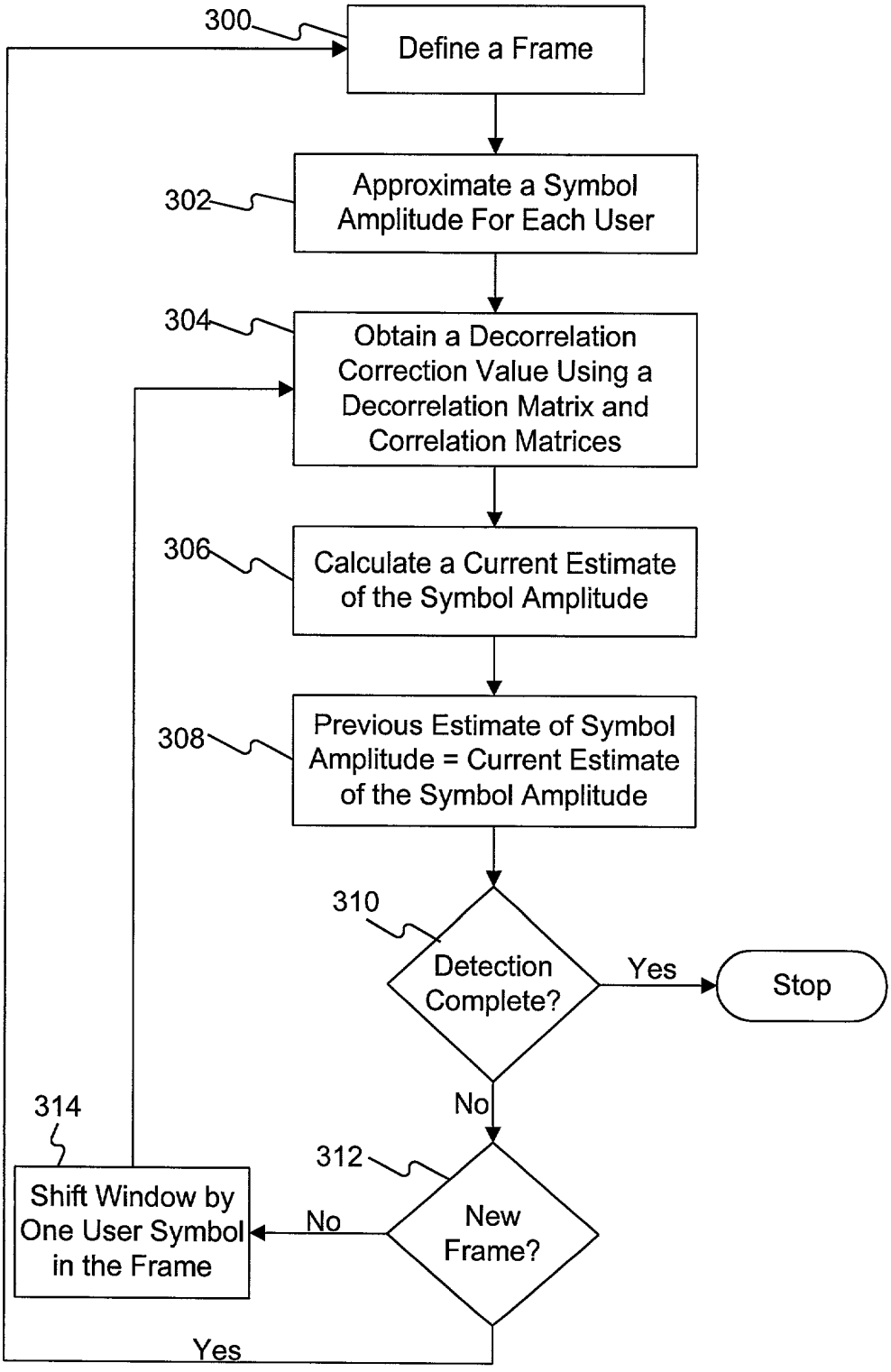
300
Define a Frame
302
Approximate a Symbol Amplitude For Each User
304
Obtain a Decorrelation Correction Value Using a Decorrelation Matrix and Correlation Matrices
306
Calculate a Current Estimate of the Symbol Amplitude
308
Previous Estimate of Symbol Amplitude = Current Estimate of the Symbol Amplitude
310
Detection Complete?
Yes
Stop
No
312
New Frame?
No
314
Shift Window by One User Symbol in the Frame
Yes

FIG. 3

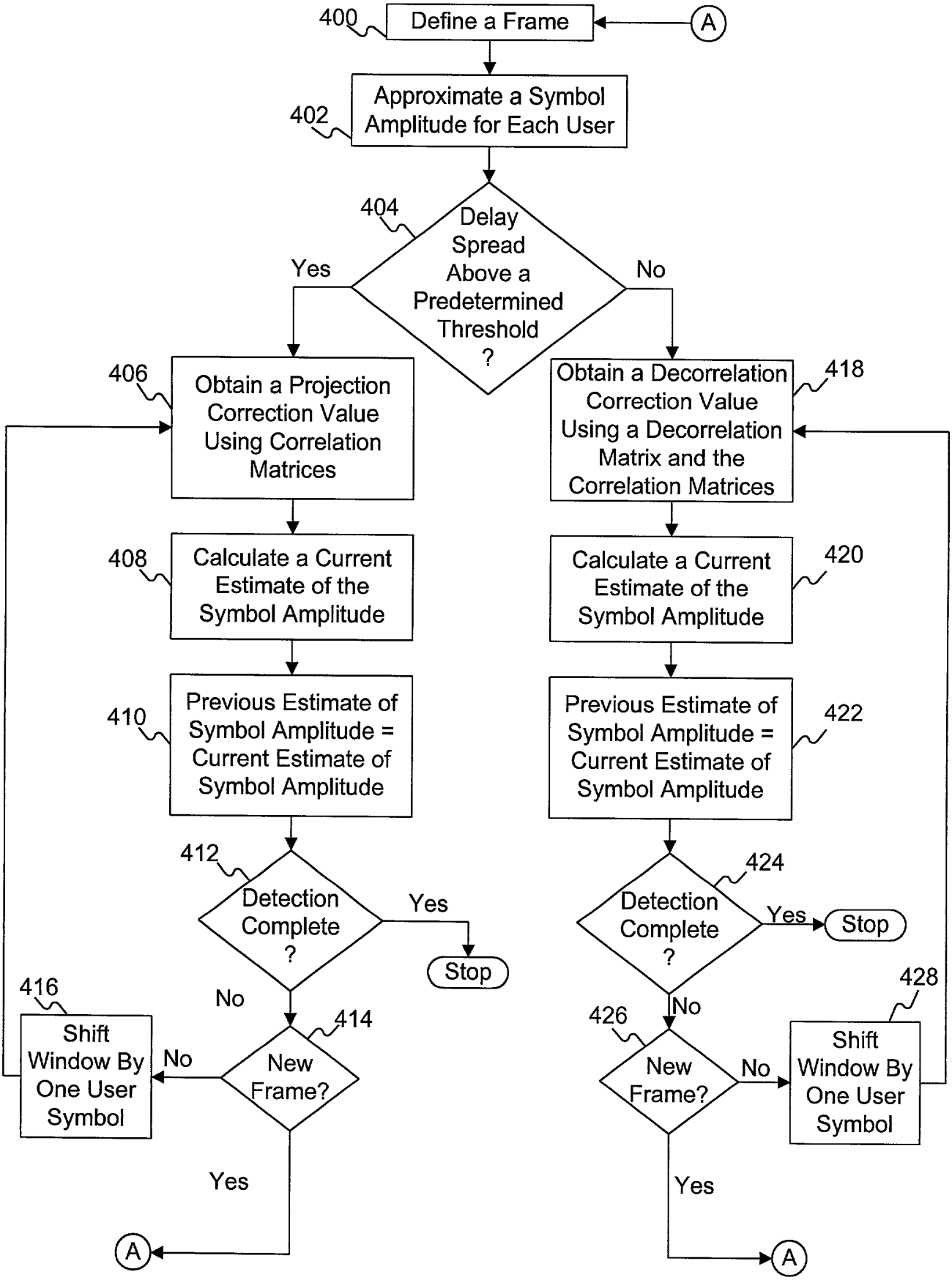
400
Define a Frame
A
402
Approximate a Symbol Amplitude for Each User
404
Delay Spread Above a Predetermined Threshold ?
Yes
No
406
Obtain a Projection Correction Value Using Correlation Matrices
408
Calculate a Current Estimate of the Symbol Amplitude
410
Previous Estimate of Symbol Amplitude = Current Estimate of Symbol Amplitude
412
Detection Complete ?
Yes
Stop
No
414
New Frame?
No
416
Shift Window By One User Symbol
Yes
A
418
Obtain a Decorrelation Correction Value Using a Decorrelation Matrix and the Correlation Matrices
420
Calculate a Current Estimate of the Symbol Amplitude
422
Previous Estimate of Symbol Amplitude = Current Estimate of Symbol Amplitude
424
Detection Complete ?
Yes
Stop
No
426
New Frame?
No
428
Shift Window By One User Symbol
Yes
A

FIG. 4

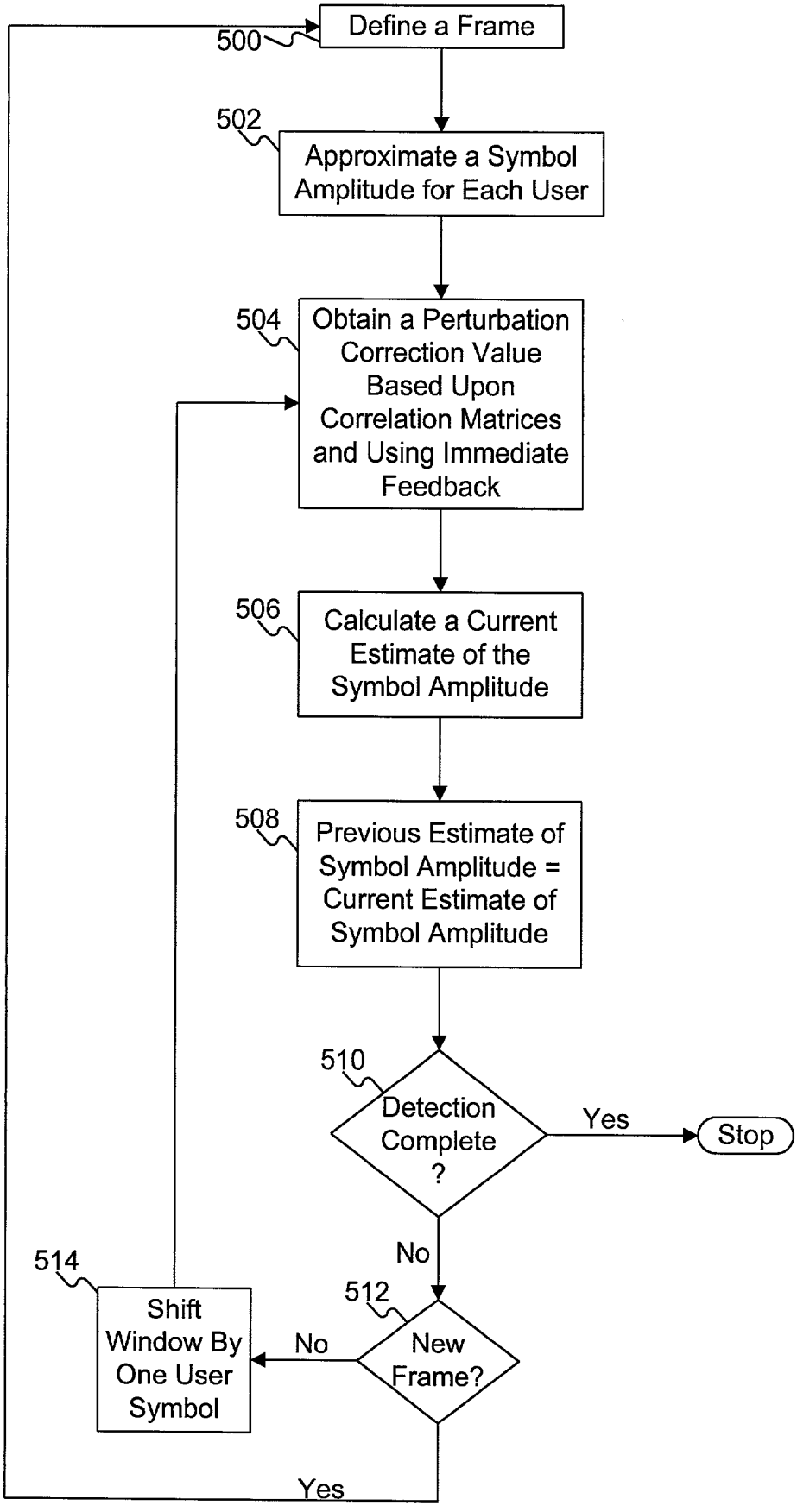
Define a Frame
500
502
Approximate a Symbol Amplitude for Each User
504
Obtain a Perturbation Correction Value Based Upon Correlation Matrices and Using Immediate Feedback
506
Calculate a Current Estimate of the Symbol Amplitude
508
Previous Estimate of Symbol Amplitude = Current Estimate of Symbol Amplitude
510
Detection Complete ?
Yes
Stop
No
512
New Frame?
No
514
Shift Window By One User Symbol
Yes

FIG. 5

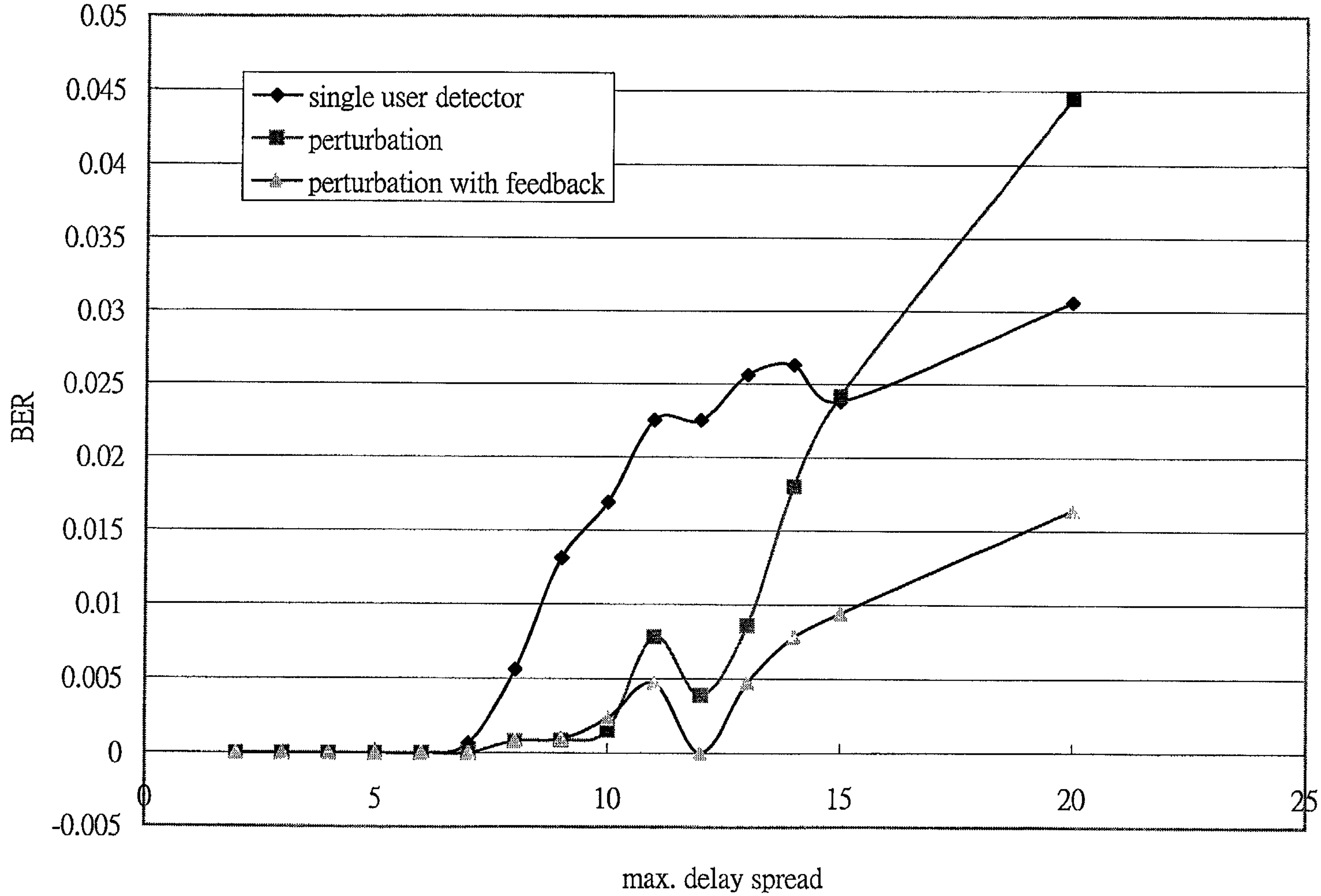
0.05
0.045
0.04
0.035
0.03
0.025
0.02
0.015
0.01
0.005
0
-0.005
BER
0
5
10
15
20
25
max. delay spread
single user detector
perturbation
perturbation with feedback

FIG. 6

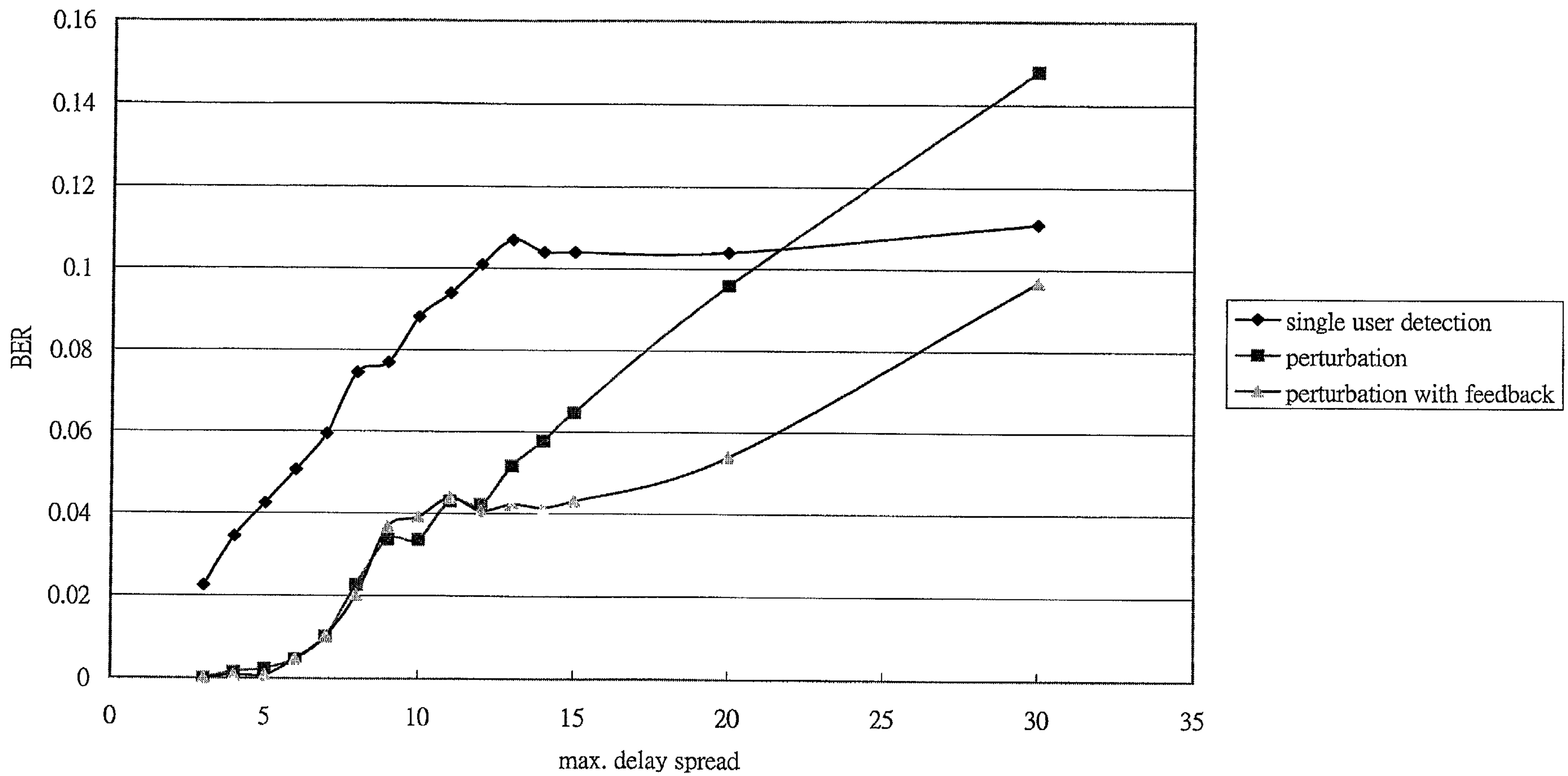
0.16
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
BER
0
5
10
15
20
25
30
35
max. delay spread
single user detection
perturbation
perturbation with feedback

FIG. 7

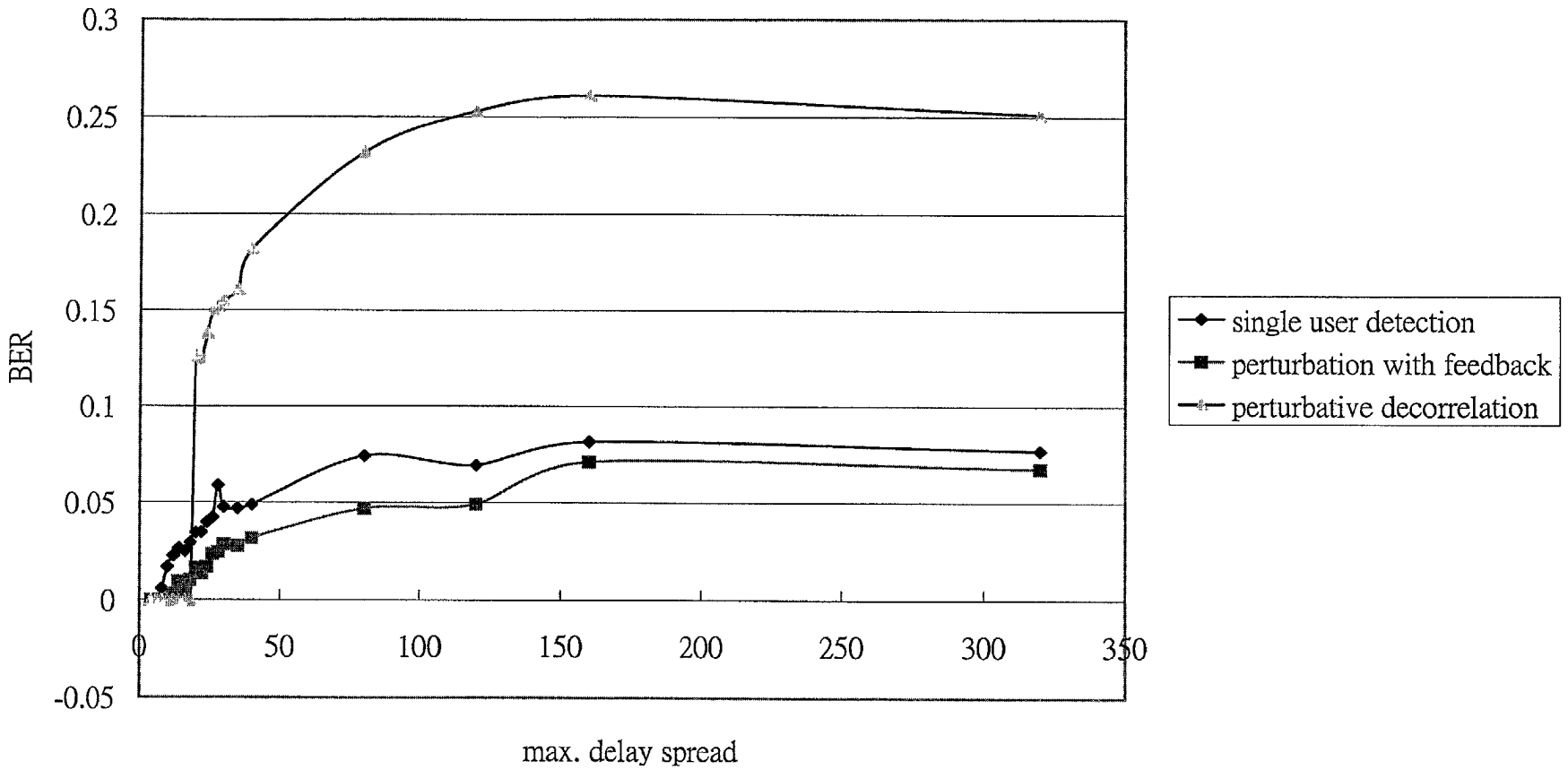
0.3
0.25
0.2
0.15
0.1
0.05
0
-0.05
BER
0
50
100
150
200
250
300
350
max. delay spread
single user detection
perturbation with feedback
perturbative decorrelation

FIG. 8

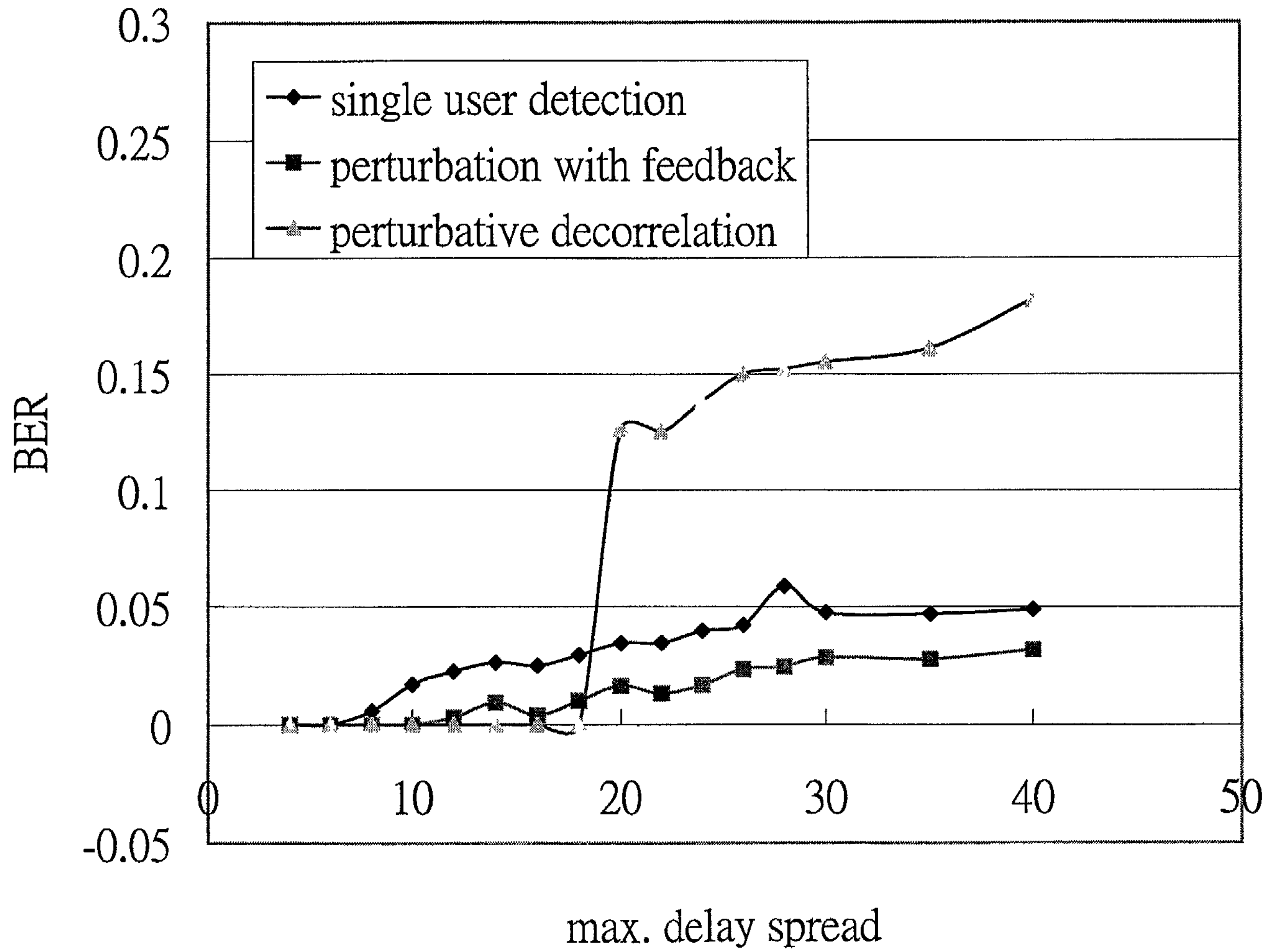
0.3
0.25
0.2
0.15
0.1
0.05
0
-0.05
BER
single user detection
perturbation with feedback
perturbative decorrelation
0
10
20
30
40
50
max. delay spread

FIG. 9

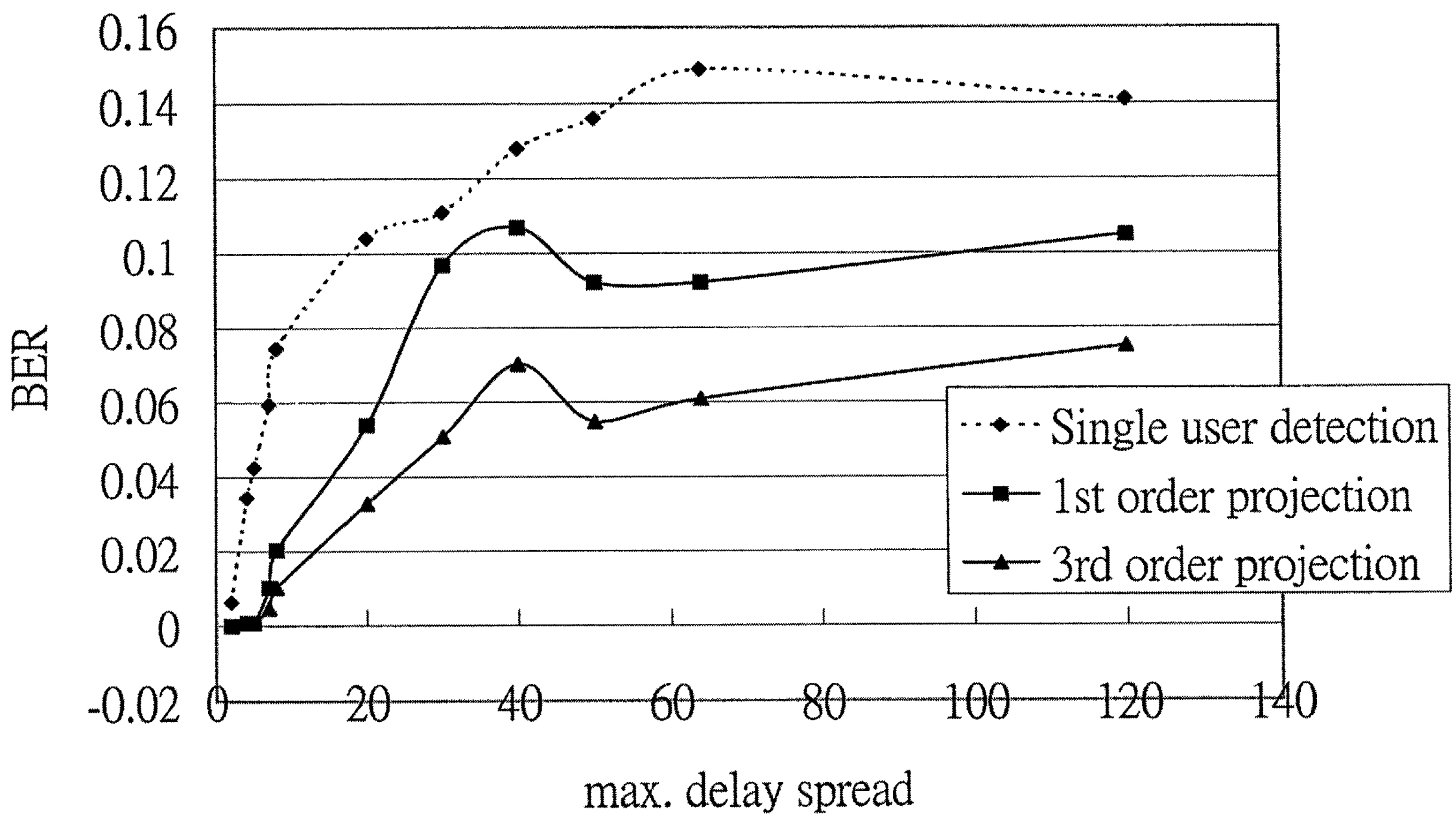
0.16
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
-0.02
BER
0
20
40
60
80
100
120
140
max. delay spread
Single user detection
1st order projection
3rd order projection

FIG. 10

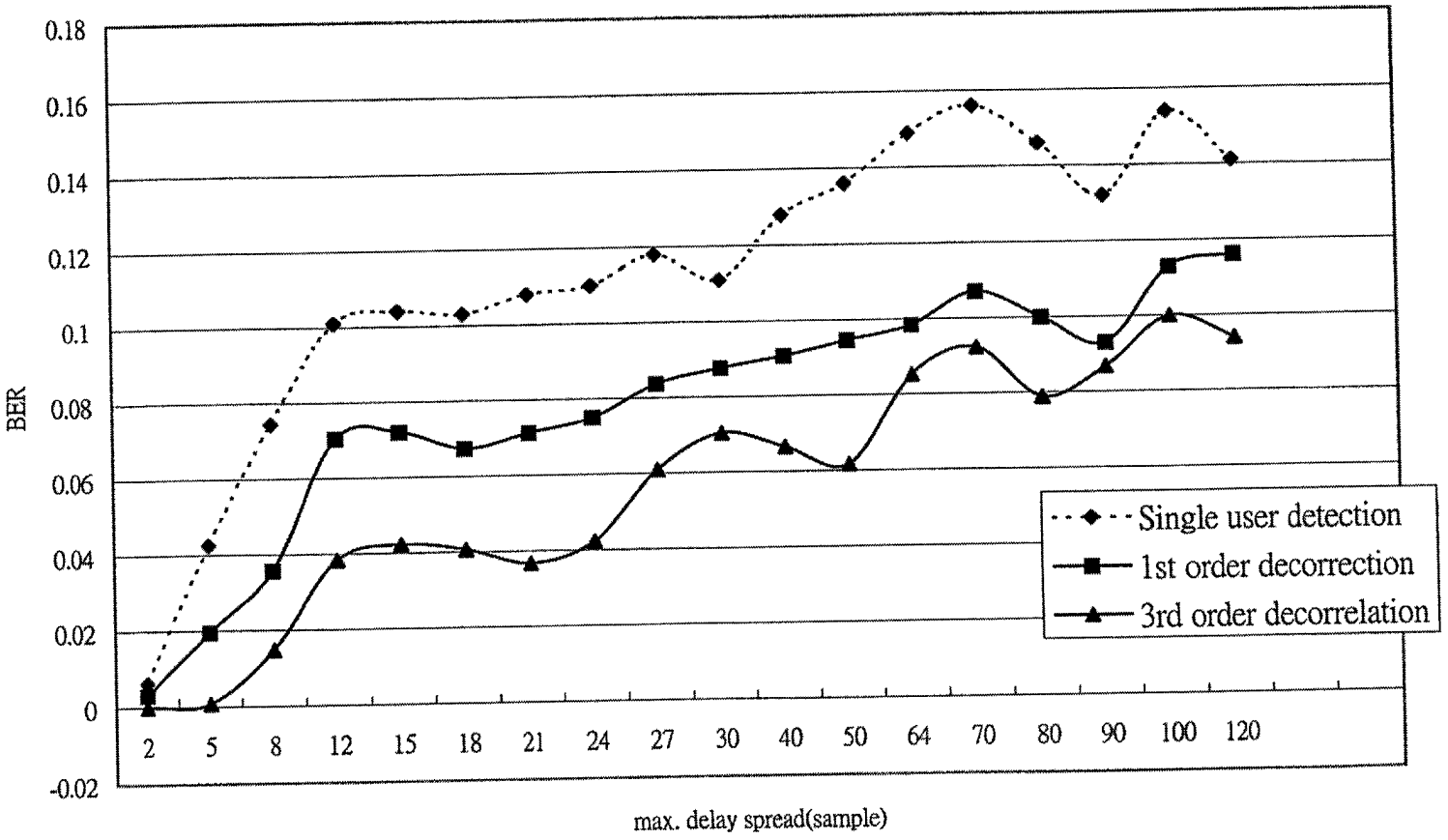
0.18
0.16
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
-0.02
BER
2
5
8
12
15
18
21
24
27
30
40
50
64
70
80
90
100
120
max. delay spread(sample)
Single user detection
1st order decorrection
3rd order decorrelation

FIG. 11